2 - Optimal pricing strategies for empty container management

Jing-An Li, MADIS, Institute of Systems Science, Academy of Mathematics and Systems Science, No. 55, Zhongguancun East Road, Haidian District, 100190, Beijing, China, ajli@amss.ac.cn

One assumption in most research about empty container management is that, the demand should be satisfied by companies' owned containers or leased containers, where empty containers are always available for the lease. However, it is not true in the real world. And companies always face the shortage of empty containers to such an extent that more and more excess demand are delayed.

In this paper, we analyze the pricing strategies for empty container management. Especially, we analyze the strategy 'high price for short delivery time while low price for long delivery time'. It is shown that, this strategy can partially relax the tension of the limited empty containers. On the basis of ensuring the regular profit, this strategy also provides one flexible mechanism for empty container management.

3 - Simulation based evaluation of container terminal yard layouts

Jörg Wiese, DS&OR Lab, University of Paderborn, Warburgerstr. 100, 33098, Paderborn, Germany, wiesej@upb.de, *Leena Suhl*, *Natalia Kliewer*

The structure of a container terminal yard layout is significantly influenced by the equipment type used for stacking operations. Based on these equipment types different yard layout categories can be distinguished, such as parallel rubber tired gantry crane based layouts or perpendicular rail mounted gantry crane based layouts. We present a simulation study in which we evaluate if these yard layout categories (respectively different yard layouts) are adequate for several possible scenarios, e.g. for scenarios with varying ratios of transshipment and import/export containers.

4 - Generic Port Operations Simulator

Rui Carlos Botter, Logistics Systems, University of São Paulo, Av. Prof. Mello Moraes, no. 2231, 05356000, São Paulo, SP, Brazil, rcbotter@usp.br, *Afonso Celso Medina*

The research presents a generic simulator for iron ore port operations that allow the analysis of current and future operations of bulk terminals, aiming identification of bottlenecks, operational alternatives and needs for infrastructure, as well as estimating the equipments required annual productivity rates, the storage capacity requirements of all different products handled, according to the operational restrictions; evaluation of the nominal capacity and operational efficiency of the handling equipments and the selection of the export plans in the short, medium and long time horizon.

■ TD-41

Tuesday, 14:00-15:20
3.1.06

Applications of System Dynamics Modeling III

Stream: System Dynamics Modeling
Invited session
Chair: *Gisele Bosso de Freitas*, Department of Physics, Sao Paulo State University, Brazil, freitas_gb@yahoo.com.br

1 - Diffusion equation, growth and diagnosis of tumor agressiveness

Gisele Bosso de Freitas, Department of Physics, Sao Paulo State University, Brazil, freitas_gb@yahoo.com.br, *Elso Drigo Filho*

In this work we study a model for growth of tumor cells based on a diffusion equation, which uses a 2D model on the growth of cells "in vitro". The solutions obtained can be compared to the ways that tumor cells take during growth, which may indicate tumor aggressiveness. Thus, comparing the solutions obtained through the model to the tumor forms "in vitro" could be inferred, the solutions obtained through the model, which more aggressive tumors. We suggest that this identification is related to the number of basis functions required to simulate the contour of the tumor.

2 - Optimization of resources for a behavior controlled of Petri nets with multipliers in dioid algebra

Samir Hamaci, Productique, EPMI, 13, boulvard de l'Hautil, 95092, Cergy, France, S.HAMACI@EPMI.FR, *Rahim Benfkir*

We are particularly interested to the problem of allocating an initial marking in a Timed Event Graphs with Multipliers for a desired cycle time. For this, for define the marking of some places, we proceed by linearization of the mathematical model reflecting the behavior of a TEGM in order to obtain a (min, +) linear model. From the latter, we determine the marking which satisfies the desired cycle time.

3 - Collective animal manure management simulation and environmental impact assessment

Francois Guerrin, CA, Inra/Cirad, Station de la Bretagne - BP 20, 97408, Saint-Denis, France, francois.guerrin@cirad.fr

This contribution deals with simulation modeling to help manage agricultural production systems. It describes the use of a Systems Dynamics complex model to simulating the functioning of pig slurry collective spreading plans in Brittany (Northwestern France), where intensive livestock farming has a well-known harmful environmental impact, namely on groundwater and coastal waters. The model dynamically simulates the slurry stock evolutions at pig farms and the spreading fluxes on crops, both at the pig farms and the remote crop farms.

■ TD-42

Tuesday, 14:00-15:20
3.1.07

Decison Making 1

Stream: Decision Making
Contributed session
Chair: *Alan French*, The Business School, Loughborough University, Ashby Road, LE11 3UT, Loughborough, United Kingdom, A.P.French@lboro.ac.uk

1 - Tail Restricted Stochastic Dominance (TRSD): A Class for Quasi Stochastic Dominance

Edgar Elias Osuna, Centro de Finanzas, Instituto de Estudios Superiores de Administracion (IESA), Av. IESA, San Bernardino, 1010, Caracas, DC, Venezuela, eosuna@iesa.edu.ve

We introduce a class for quasi stochastic dominance between probability distributions. It will be concerned with a dominance restricted to a range of values of the random variables which disregards very unlikely outcomes; specifically those in the tail(s) of the distributions. We have named the class Tail Restricted Stochastic Dominance (TRSD) to differentiate it from two similar concepts: the almost stochastic dominance for investment decisions (ASD) introduced by Leshno and Levy (2002) and the restricted stochastic dominance used by Davidson and Duclos (2000) for poverty studies. We illustrate the concept for the case of two empirical distributions and apply it to decision making under risk.

2 - The effects of emotions on decision making

Mohammad Emambocus, Business, London South Bank University, 103 Borough Road, SE1 0AA, London, United Kingdom, emambocm@lsbu.ac.uk

Decision making occurs in the light of uncertainty between different alternatives depending on the expected outcomes. These rational decisions are taken through the application of conditional probability as elaborated by Bayes' Theorem. However, there are lots of evidences that have proven that investors violate the Bayes rules and this is mainly due to the effects of emotions which affects the rational decision-making process. This paper investigates at this issue and analyses whether emotions are harmful to decision making or is it enhancing the process.

3 - Measuring Changes in Brand Knowledge/Perception Using Brand Concept Mapping

Alan French, The Business School, Loughborough University, Ashby Road, LE11 3UT, Loughborough, United Kingdom, A.P.French@lboro.ac.uk, *Gareth Smith*

The brand is an associative network of interconnected information about an object, held in memory and accessible when stimulated from the memory of a consumer. This network is dynamic and subject to change. We show how Brand Concept Mapping can be used to capture individual maps of consumers perception of brands at a point in time, which are then aggregated to produce one consensus map. In this way, changes in perception of a brand can be tracked over time. We treat the leaders of the main political parties in the UK as brands and illustrate the approach in the run-up to the general election.

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